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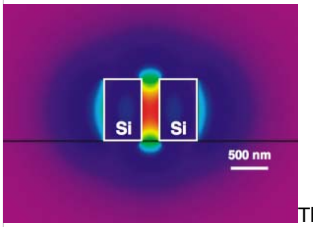
New Silicon-Organic Hybrid Material Could Make Internet Even Faster

March 16th, 2009 by Derek Hardman



The term “green” has become ubiquitous in politics and technology to describe efforts to lessen, prevent and even reverse environmental damage and unsustainable growth and energy consumption. Now, however, with scientists and engineers looking to nature for organic components to enhance and expand synthetic mechanisms, the term “green” has come full circle.

Ivan Biaggio, associate professor of physics at Lehigh University, along with his international team of researchers have developed an organic material that, when applied to waveguides between silicon circuits, greatly enhancing its data transmission performance to superfast levels.

The nonlinear organic material, due to its photo-active, homogenous molecular composition, augments the flow of information by adding an all-optical switching capability to silicon circuitry, expanding their functionality for light-to-light interactions necessary for data transmission and processing in all-optical networks. This silicon-organic hybrid material combines silicon’s waveguide-building strengths with photo-sensitive organic materials’ to transmit light data quickly and cogently.

The synthetic-organic hybrid technology was presented last year, albeit post-deadline, at an optical telecom industry summit, with an article making the development and its results (“A High-optical Quality Supramolecular Assembly for Third-Order Integrated Nonlinear Optics”) public in the October 2008 issue of Advanced Materials.

While there is still no word as to how or when this technology could reach the consumer level, announcement of this technology should give the world something to look forward to as their silicon-only waveguides bear even heavier burdens with more video content becoming available for streaming online.

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